[PATENT CLAIM(S)]

1. A transmission device in a code division multiple access (CDMA) communication system, comprising:

a traffic channel transmitter for transmitting voices and data; and

a common power control channel transmitter being shared by at least two subscribers and transmitting power control commands for the subscribers.

2. The transmission device as claimed in claim 1, wherein the common power control channel transmitter allocates time by subscribers and transmits the power control commands.

3. The transmission device as claimed in claim 2, wherein the common power control channel transmitter uses a single orthogonal code.

4. A common power control channel transmission device in a CDMA communication system, comprising:

a slot controller for designating a time slot for transmitting power control commands generated from multiple subscribers;

a selector for multiplexing the power control commands by the unit of a power control group under the control of an output of the slot controller;

an orthogonal modulator for orthogonally modulating an output signal from the selector by multiplying the output signal of the selector by an orthogonal code of a common power control channel; and

a spreading modulator for spreading an output signal from the orthogonal modulator by multiplying the output signal of the orthogonal modulator by a spreading sequence, and transmitting the spread signal.

5. The common power control channel transmission device as claimed in claim 4, wherein the slot controller assigns positions of the power control commands for each power control group.

6. The common power control channel transmission device as claimed in claim 4 or 5, further comprising scramblers connected between a node for receiving the power control commands and the selector, for scrambling the power control commands by multiplying the power control commands by corresponding user's pseudo-random noise (PN) sequences assigned to the respective subscribers.

7. A power control method in a CDMA communication system, comprising the steps of:

(a) multiplexing power control commands for multiple subscribers by the unit of a power control group under the control of a control signal for a time slot for transmitting the power control commands generated from the multiple subscribers;

(b) orthogonally modulating the multiplexed power control commands by multiplying the power control commands by an orthogonal code of a common power control channel; and

(c) spreading the orthogonally modulated power control commands by multiplying the power control commands by a spreading sequence, and transmitting the spread power control commands via the common power control channel.

8. The power control method as claimed in claim 7, wherein in the multiplexing step (a), positions of the power control commands are assigned to every power control groups.

9. The power control method as claimed in claim 7 or 8, further comprising the step of scrambling the power control commands by multiplying the corresponding power control commands by user's pseudo-random noise codes assigned to the respective subscribers and then performing the multiplexing step (a).

10. A channel transmission device in a CDMA communication system, comprising:

a common control channel transmitter; and

a subscriber channel transmitter corresponding to the common control channel transmitter,

wherein the common control channel transmitter comprises: a slot controller for designating a time slot for transmission of power control commands generated from multiple subscribers; a selector receiving the power control commands and multiplexing them by the power control group unit according to an output of the slot controller; an orthogonal modulator for orthogonally modulating an output of the selector by multiplying the output of the selector by an orthogonal code of a common power control channel; and a spreading modulator for multiplying an output of the orthogonal modulator by a spreading sequence to spread the output of the orthogonal modulator and transmitting the spread output of the orthogonal modulator to the common power control channel,

wherein the subscriber channel transmitter comprises: an encoder for encoding data on a subscriber channel into symbol data; a puncture position controller for generating a puncture position control signal for the symbol data corresponding to positions of the power control commands on the subscriber channel; a puncturer for receiving the symbol data output from the encoder and puncturing the symbol data according to the puncture position control signal; an orthogonal modulator for modulating an output of the puncturer with an orthogonal code of the corresponding subscriber channel; and a spreading modulator for multiplying an output of the orthogonal modulator by a spreading sequence to spread the output of the orthogonal modulator and transmitting the spread output of the orthogonal modulator to the subscriber channel.

11. The channel transmission device as claimed in claim 10, wherein the common power control channel transmitter further comprises scramblers being connected between an input of the power control commands and the selector, for scrambling the power control commands by multiplying the corresponding power control commands by user's pseudo-random noise codes assigned to the respective subscribers.

12. The channel transmission device as claimed in claim 11, wherein the positions of the power control commands are assigned to every power control groups.

13. The channel transmission device as claimed in claim 11 or 12, further comprising gain controllers for transmitting the power control commands with controlled power between the scramblers and the selector.

14. A subscriber channel transmission device in a CDMA communication system which has a common power control channel transmitter for transmitting a power control command of multiple subscribers using the same orthogonal code, the subscriber channel transmission device comprising:

an encoder for encoding data on a subscriber channel into symbol data;

a puncture position controller for generating a puncture position control signal for the symbol data corresponding to a position of the power control command on the subscriber channel;

a puncturer for receiving the symbol data output from the encoder and puncturing the symbol data according to the puncture position control signal;

an orthogonal modulator for modulating an output of the puncturer with an orthogonal code of the corresponding subscriber channel; and

a spreading modulator for multiplying an output of the orthogonal modulator by a spreading sequence to spread the output of the orthogonal modulator and transmitting the spread output of the orthogonal modulator to the subscriber channel.

15. A channel communication device in a CDMA communication system, comprising:

a channel transmission device and a channel transmission reception device,

wherein the channel transmission device comprises a common control channel transmitter and a subscriber channel transmitter,

wherein the common control channel transmitter comprises: a slot controller for designating a time slot for transmission of power control commands generated from multiple subscribers; a selector receiving the power control commands and multiplexing them by the power control group unit according to an output of the slot controller; an orthogonal modulator for orthogonally modulating an output of the selector by multiplying the output of the selector by an orthogonal code of a common power control channel; and a spreading modulator for multiplying an output of the orthogonal modulator by a spreading sequence to spread the output of the orthogonal modulator and transmitting the spread output of the orthogonal modulator to the common power control channel,

wherein the subscriber channel transmitter comprises: an encoder for encoding data on a subscriber channel into symbol data; a puncture position controller for generating a puncture position control signal for the symbol data corresponding to positions of the power control commands on the subscriber channel; a puncturer for receiving the symbol data output from the encoder and puncturing the symbol data according to the puncture position control signal; an orthogonal modulator for modulating an output of the puncturer with an orthogonal code of the corresponding subscriber channel; and a spreading modulator for multiplying an output of the orthogonal modulator by a spreading sequence to spread the output of the orthogonal modulator and transmitting the spread output of the orthogonal modulator to the subscriber channel,

wherein the subscriber channel reception device comprises: a despreader for despreading a spread subscriber channel signal by multiplying the spread subscriber channel signal by the spreading sequence; a first orthogonal code generator for generating a first orthogonal code for demodulating the symbol data on the subscriber channel; a second orthogonal code generator for generating a second orthogonal code for demodulating the power control command on the common power control channel; a position selector for generating a position select signal for the power control command; a first switch for connecting the orthogonal codes to the orthogonal modulator under the control of the position selector; and a second switch receiving the output of the orthogonal modulator, and transferring the subscriber channel symbol data and the power control command to a data combiner or a power control command combiner under the control of the position selector.

16. A channel reception device in a CDMA communication system, which is to receive a power control command for a common power control channel and information for a subscriber channel, the channel reception device comprising:

a despreader for despreading a spread subscriber channel signal by multiplying the spread subscriber channel signal by the spreading sequence;

a first orthogonal code generator for generating a first orthogonal code for demodulating symbol data on the subscriber channel;

a second orthogonal code generator for generating a second orthogonal code for demodulating the power control command on the common power control channel;

a position selector for generating a position select signal for the power control command;

a first switch for connecting the orthogonal codes to the orthogonal modulator under the control of the position selector; and a second switch receiving the output of the orthogonal modulator, and transferring the subscriber channel symbol data and the power control command to a data combiner or a power control command combiner under the control of the position selector.

17. A channel reception device in a CDMA communication system, which is to receive a power control command for a common power control channel and information for a subscriber channel, the channel reception device comprising:

a despreader for despreading a spread subscriber channel signal by multiplying the spread subscriber channel signal by the spreading sequence;

an orthogonal code generator for generating an orthogonal code for demodulating the power control command of the common power control channel;

an orthogonal demodulator for multiplying an output of the orthogonal code generator by an output of the despreader;

a position selector for generating a position select signal for the power control command; and

a selector for selecting the power control command of a specific subscriber corresponding to an output of the position selector and outputting the selected power control command to a power control command combiner.